

WHAT IS CLAIMED IS:

1. An at least partially coated fiber strand comprising a plurality of fibers having a resin compatible coating composition on at least a portion of a surface of at least one of the fibers, the resin compatible coating composition comprising:
 - (a) a plurality of discrete particles formed from materials selected from non-heat expandable organic materials, inorganic polymeric materials, lamellar particles having a thermal conductivity of at least 1 Watt per meter K at a temperature of 300 K, non-heat expandable composite materials and mixtures of any of the foregoing, the particles having an average particle size sufficient to allow strand wet out;
 - (b) at least one lubricious material different from the plurality of discrete particles; and
 - (c) at least one film-forming material.
- 15 2. An at least partially coated fiber strand according to claim 1, wherein the resin compatible coating composition is a residue of an aqueous coating composition.
- 20 3. An at least partially coated fiber strand according to claim 1, wherein the resin compatible coating composition is a powdered coating composition.
4. An at least partially coated fiber strand according to claim 1, wherein the at least partially coated fiber strand comprises at least one glass fiber.
- 25 5. An at least partially coated fiber strand according to claim 1, wherein the at least partially coated fiber strand comprises a plurality of glass fibers.
6. An at least partially coated fiber strand according to claim 5, wherein 30 the plurality of glass fibers are selected from E-glass fibers, D-glass fibers, S-glass fibers, Q-glass fibers, and E-glass derivative fibers.

7. An at least partially coated fiber strand according to claim 6, wherein the plurality of glass fibers are E-glass fibers.

8. An at least partially coated fiber strand according to claim 6, wherein
5 the plurality of glass fibers are E-glass derivative fibers.

9. An at least partially coated fiber strand according to claim 1, wherein the non-heat expandable organic materials are selected from thermosetting materials, thermoplastic materials, and mixtures thereof.

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10. An at least partially coated fiber strand according to claim 9, wherein the non-heat expandable organic materials are thermosetting materials selected from thermosetting polyesters, vinyl esters, epoxy materials, phenolics, aminoplasts, thermosetting polyurethanes and mixtures of any of the foregoing.

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11. An at least partially coated fiber strand according to claim 1, wherein the non-heat expandable organic materials are thermoplastic materials selected from thermoplastic polyesters, polycarbonates, polyolefins, acrylic polymers, polyamides, thermoplastic polyurethanes, vinyl polymers and mixtures of any of the foregoing.

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12. An at least partially coated fiber strand according to claim 1, wherein the inorganic polymeric materials are selected from polyphosphazenes, polysilanes, polysiloxane, polygermanes, polymeric sulfur, polymeric selenium, silicones and mixtures of any of the foregoing.

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13. An at least partially coated fiber strand according to claim 1, wherein the lamellar particles are inorganic.

14. An at least partially coated fiber strand according to claim 13, wherein
30 the lamellar particles are selected from boron nitride, molybdenum disulfide,
graphite, molybdenum diselenide, tantalum disulfide, tantalum diselenide, tungsten
disulfide, tungsten diselenide and mixtures of any of the foregoing.

15. An at least partially coated fiber strand according to claim 1, wherein
the non-heat expandable composite materials are selected from particles that have a
hardness at their surface that is different from the hardness of the internal portions of
5 the particle beneath its surface.

16. An at least partially coated fiber strand according to claim 15, wherein
the non-heat expandable composite materials are selected from particles formed
from a primary material that is coated, clad or encapsulated with at least one
10 secondary material.

17. An at least partially coated fiber strand according to claim 15, wherein
the non-heat expandable composite materials are selected from particles formed
from a primary material that is coated, clad or encapsulated with a differing form of
15 the primary material.

18. An at least partially coated fiber strand according to claim 1, wherein
the plurality of discrete particles provide an interstitial space between at least one
fiber and at least one adjacent fiber.
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19. An at least partially coated fiber strand according to claim 1, wherein
the plurality of discrete particles have an average particle size, measured according
to laser scattering techniques, ranging from 0.1 to 5 microns.

25 20. An at least partially coated fiber strand according to claim 1, wherein
the plurality of discrete particles comprise from 1 to 80 weight percent of the resin
compatible coating composition on a total solids basis.

30 21. An at least partially coated fiber strand according to claim 20, wherein
the plurality of discrete particles comprise from 20 to 60 weight percent of the resin
compatible coating composition on a total solids basis.

22. An at least partially coated fiber strand according to claim 1, wherein the at least one lubricious material is selected from oils, waxes, and greases.

23. An at least partially coated fiber strand according to claim 1, wherein
5 the at least one lubricious material comprises from 1 to 50 weight percent of the
resin compatible coating composition on a total solids basis.

24. An at least partially coated fiber strand according to claim 23, wherein
the at least one lubricious material is selected from comprises from 20 to 40 weight
percent of the resin compatible coating composition on a total solids basis

25. An at least partially coated fiber strand according to claim 1, wherein the at least one film-forming material is selected from organic polymeric materials, inorganic polymeric materials, and natural polymeric materials.

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26. An at least partially coated fiber strand according to claim 25, wherein
the at least one film-forming material is selected from thermoplastic materials and
thermosetting materials.

20 27. An at least partially coated fiber strand according to claim 26, wherein
the thermoplastic materials are selected from thermosetting polyesters, epoxy
materials, vinyl esters, phenolics, aminoplasts, thermosetting polyurethanes and
mixtures of any of the foregoing.

25 28. An at least partially coated fiber strand according to claim 26, wherein
the thermosetting materials are selected from vinyl polymers, thermoplastic
polyesters, polyolefins, polyamides, thermoplastic polyurethanes, acrylic polymers,
and mixtures of any of the foregoing.

30 29. An at least partially coated fiber strand according to claim 1, wherein
the at least one film-forming material comprises from 5 to 50 weight percent of the
resin compatible coating composition on a total solids basis

30. An at least partially coated fiber strand according to claim 29, wherein the at least one film-forming material comprises from 10 to 30 weight percent of the resin compatible coating composition on a total solids basis.

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31. An at least partially coated fiber strand according to claim 1, wherein the resin compatible coating comprises a resin reactive diluent.

32. An at least partially coated fiber strand according to claim 31, wherein
10 the resin reactive diluent is a lubricant comprising one or more functional groups capable of reacting with an epoxy resin system and selected from the group consisting of amine groups, alcohol groups, anhydride groups, acid groups and epoxy groups.

15 33. An at least partially coated fiber strand comprising a plurality of fibers having a resin compatible coating composition on at least a portion of a surface of at least one of the fibers, the resin compatible coating composition comprising:

- (a) a plurality of particles comprising:
 - (i) at least one particle formed from at least one organic material;
 - 20 and
 - (ii) at least one particle formed from at least one inorganic material selected from boron nitride, graphite, and metal dichalcogenides,
wherein the plurality of particles have an average particle size sufficient to allow strand wet out;
- 25 (b) at least one lubricious material different from the plurality of particles;
and
- (c) at least one film-forming material.

34. An at least partially coated fiber strand according to claim 33, wherein
30 the at least one organic material is a polymeric organic material.

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35. An at least partially coated fiber strand according to claim 34, wherein the polymeric organic material is a thermosetting material selected from vinyl polymers, thermoplastic polyesters, polyolefins, polyamides, thermoplastic polyurethanes, and acrylic polymers.

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36. An at least partially coated fiber strand according to claim 35, wherein the polymeric organic material is an acrylic copolymer selected from copolymers of styrene and an acrylic monomer.

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37. An at least partially coated fiber strand according to claim 33, wherein the plurality of particles have an average particle size, measured according to laser scattering techniques, ranging from 0.1 to 5 microns.

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38. An at least partially coated fiber strand according to claim 33, wherein the plurality of particles comprise from 1 to 80 weight percent of the resin compatible coating composition on a total solids basis.

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39. An at least partially coated fiber strand according to claim 34, wherein the plurality of particles comprise from 20 to 60 weight percent of the resin compatible coating composition on a total solids basis.

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40. An at least partially coated fiber strand according to claim 33, wherein the at least one lubricious material comprises from 1 to 50 weight percent of the resin compatible coating composition on a total solids basis.

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An at least partially coated fiber strand according to claim 40, wherein the at least one lubricious material comprises from 20 to 40 weight percent of the resin compatible coating composition on a total solids basis.

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42. An at least partially coated fiber strand according to claim 33, wherein the at least one film-forming material comprises from 5 to 50 weight percent of the resin compatible coating composition on a total solids basis.

43. An at least partially coated fiber strand according to claim 42, wherein the at least one film-forming material comprises from 10 to 30 weight percent of the resin compatible coating composition on a total solids basis.

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~~44. An at least partially coated fiber strand comprising a plurality of fibers, the coating comprising at least one organic component and lamellar particles having a thermal conductivity of at least 1 Watt per meter K at a temperature of 300 K.~~

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45. An at least partially coated fiber strand according to claim 44, wherein the at least one organic component and the lamellar particles are the same.

46. An at least partially coated fiber strand according to claim 44, wherein the at least one organic component and the lamellar particles are different.

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47. An at least partially coated fiber strand according to claim 45, wherein the lamellar particles are inorganic.

48. An at least partially coated fiber strand according to claim 44, wherein 20 the lamellar particles have a thermal conductivity of at least 5 Watts per meter K at a temperature of 300 K.

49. An at least partially coated fiber strand according to claim 44, wherein 25 the lamellar particles have a thermal conductivity ranging from 5 to 2000 Watts per meter K at a temperature of 300 K.

50. An at least partially coated fiber strand according to claim 44, wherein 30 the lamellar particles are selected from boron nitride, molybdenum disulfide, graphite, molybdenum diselenide, tantalum disulfide, tantalum diselenide, tungsten disulfide, tungsten diselenide and mixtures of any of the foregoing.

51. An at least partially coated fiber strand comprising a plurality of glass fibers having a resin compatible coating composition on at least a portion of a surface of at least one of the glass fibers, the resin compatible coating composition comprising :

5 (a) a plurality of lamellar, inorganic particles having a Mohs' hardness value which does not exceed the Mohs' hardness value of the glass fibers; and
 (b) at least one polymeric material.

52. An at least partially coated fiber strand according to claim 51, wherein
10 the lamellar particles have a Mohs' hardness value ranging from 0.5 to 6.

53. An at least partially coated fiber strand according to claim 51, wherein
the at least one polymeric material is selected from organic polymeric materials,
inorganic polymeric materials, and natural polymeric materials.

15 54. An at least partially coated fiber strand according to claim 53, wherein
the at least one polymeric material is selected from thermoplastic materials and
thermosetting materials.

20 55. An at least partially coated fiber strand according to claim 54, wherein
the thermoplastic materials are selected from thermosetting polyesters, epoxy
materials, vinyl esters, phenolics, aminoplasts, thermosetting polyurethanes and
mixtures of any of the foregoing.

25 56. An at least partially coated fiber strand according to claim 54, wherein
the thermosetting materials are selected from vinyl polymers, thermoplastic
polyesters, polyolefins, polyamides, thermoplastic polyurethanes, acrylic polymers,
and mixtures of any of the foregoing.

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